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Unit-X: Economic Botany

Chapter-10. Economically Useful Plants and Entrepreneurial Botany

Book back Answers

I. One mark questions:-

- Consider the following statements and choose the right option.
i) Cereals are members of grass family.
ii) Most of the food grains come from monocotyledon.
a) (i) is correct and (ii) is wrong b) Both (i) and (ii) are correct
c) (i) is wrong and (ii) is correct d) Both (i) and (ii) are wrong
- Assertion: Vegetables are important part of healthy eating.
Reason: Vegetables are succulent structures of plants with pleasant aroma and flavours.
a) Assertion is correct, Reason is wrong b) Assertion is wrong, Reason is correct
c) Both are correct and reason is the correct explanation for assertion.
d) Both are correct and reason is not the correct explanation for assertion.
- Groundnut is native of _____
a) Philippines b) India c) North America d) Brazil
- Statement A: Coffee contains caffeine
Statement B: Drinking coffee enhances cancer
a) A is correct, B is wrong b) A and B – Both are correct c) A is wrong, B is correct d) A and B – Both are wrong
- Tectona grandis* is coming under family
a) Lamiaceae b) Fabaceae c) Dipterocarpaceae d) Ebenaceae
- Tamarindus indica* is indigenous to
a) Tropical African region b) South India, Sri Lanka c) South America, Greece d) India alone
- New world species of cotton
a) *Gossypium arboreum* b) *G. herbaceum* c) Both a and b d) *G. barbadense*
- Assertion: Turmeric fights various kinds of cancer
Reason: Curcumin is an anti-oxidant present in turmeric
a) Assertion is correct, Reason is wrong b) Assertion is wrong, Reason is correct
c) Both are correct d) Both are wrong
- Find out the correctly matched pair.
a) Rubber - *Shorea robusta* b) Dye - *Lawsonia inermis* c) Timber - *Cyperus papyrus* d) Pulp - *Hevea brasiliensis*
- Observe the following statements and pick out the right option from the following:
Statement I – Perfumes are manufactured from essential oils.
Statement II – Essential oils are formed at different parts of the plants.
a) Statement I is correct b) Statement II is correct c) Both statements are correct d) Both statements are wrong
- Observe the following statements and pick out the right option from the following:
Statement I: The drug sources of Siddha include plants, animal parts, ores and minerals.
Statement II: Minerals are used for preparing drugs with long shelf-life.
a) Statement I is correct b) Statement II is correct c) Both statements are correct d) Both statements are wrong
- The active principle trans-tetra hydro cannabiol is present in
a) Opium b) Curcuma c) Marijuana d) *Andrographis*
- Which one of the following matches is correct?
a) Palmyra - Native of Brazil b) Saccharin - Abundant in Kanyakumari
c) Steviol - Natural sweetener d) Palmyra sap - Fermented to give ethanol
- The only cereal that has originated and domesticated from the New world.
a) *Oryza sativa* b) *Triticum aestivum* c) *Triticum durum* d) *Zea mays*

II. Two, Three, Five Mark Questions:-**15. Write the cosmetic uses of Aloe.**

1. Used as a skin tonic
2. Used for Cream, lotion, shampoo preparation
3. It is a antibacterial, antifungal, antioxidant and antiseptic.

16. What is pseudo cereal? Give an example.

- (i) The term pseudo-cereal is used to describe foods that are prepared and eaten as a whole grain (except grass Family plants)
- (ii) Example: Chenopodium quinoa.

17. Discuss which wood is better for making furniture.

1. Teak (*Tectona grandis*) is the one of the best timber in the world.
2. It possesses durability against termites and fungi.
3. This wood does not split and crack so it is a carpenter friendly wood.
4. It is used in railway wagon, bridge and ship construction work.
5. So, Teak is the best wood for furniture making.

18. A person got irritation while applying chemical dye. What would be your suggestion for alternative?

1. Chemical dyes are causes skin allergy and skin diseases.
2. Henna is a natural dye extracted from *Lawsonia inermis* (மருதாணி)
3. It is harmless and no irritation to the skin. So, It is a good alternate source for chemical dyes.

19. Name the humors that are responsible for the health of human beings.

The following three humors are responsible for the health of human beings. Such as..

1. Vatam (வாதம்)
2. Pittam (பித்தம்)
3. Kapam (கபம்).

20. Give definitions for organic farming?

1. The main concept of the organic farming is Back to the Nature.
2. It is an alternative agricultural system in which plants and crops are cultivated in natural ways.
3. By using biological inputs to maintain the soil fertility.

21. Which is called as the "King of Bitters"? Mention their medicinal importance.

1. Nilavembu (நிலவேம்பு) is called as The King of Bitters (*Andrographis paniculata*).
2. It is used to treat liver disorders
3. It is effectively used to treat malaria and dengue fever.

22. Differentiate bio-medicines and botanical medicines.**Bio-Medicines:**

Medicinally useful molecules obtained from plants that are marketed as drugs are called Biomedicines.

Botanical Medicines:

Medicinal plants which are marketed as powders or in other modified forms are known as Botanical medicines.

23. Write the origin and area of cultivation of green gram and red gram.

Common Name	Botanical Name	Origin	Area of Cultivation	Uses
1. Red gram or Pigeon Pea (துவரை)	<i>Cajanus cajan</i>	South India	Andhra, Karnataka, Maharashtra	1. Used in Sambar Preparation. 2. Used as a Snacks
2. Green Gram (பாசிப்பருப்பு)	<i>Vigna radiata</i>	India	Tamil Nadu, Karnataka, Madhya Pradesh	1. Used in Pongal Preparation. 2. Used as a Snacks 3. Used as a Cosmetics

24. What are Millets? What are its types? Give example for each type.

1. It is a variety of very small seeds originally cultivated by ancient peoples of Africa and Asia.
2. Types and examples of Millets: Finger Millet - Ragi, Foxtail Millet - Thinai, Kodo Millet - Varagu.

25. If a person drinks a cup of coffee daily it will help him for his health. Is this correct?

If it is correct, list out the benefits.

- (i) Yes, it is correct. Caffeine enhances release of acetylcholine in brain. Which in turn enhances efficiency.
(ii) It may reduce the risk of liver diseases, cancer and type 2 diabetes.

So, drinking a cup of coffee in our daily life it will be helpful for our health.

26. Enumerate the uses of turmeric.

1. Turmeric is used in colouring agent in food industry and pharmacy.
2. It is important constituent of curry powders.
3. It is also used for dyeing leather, fibre, paper and toys.
4. Curcumin is extracted from turmeric. It is an anti-bacterial, anti-fungal and anti-viral medicine.
5. It is a very good anti-oxidant which helps to fight various kinds of cancer.

27. What is TSM? How is it classified and what does it focus on?

Meaning of TSM:

TSM means Traditional system of Medicines. India has a rich medicinal heritage.

Classification of TSM:

In India TSM is classified into two types such as...

- (i) Institutionalized or Documented method (ii) Non-institutionalized or Oral method

Focus of TSM:

The TSM focuses on healthy life style and healthy diet for maintaining good health and disease reversal.

28. Write the uses of nuts you have studied.

1. Cashew nuts are commonly used in sweets and curries.
2. Roasted and raw kernels are used as snacks.

29. Give an account on the role of *Jasminum* in perfuming.

1. Jasmine flowers have been used since ancient times in India for worship.
2. It is a fumigant as well as making perfumed hair oils, cosmetics and soaps.
3. It has anti-depression qualities.
4. It is popular in air freshener.
5. It is used in talcum powders, shampoos and deodorants.

30. Give an account of active principle and medicinal values of any two plants you have studied.

Common Name	Botanical Name	Family	Active principle	Medicinal value
1. Keezhanelli (கீழாநெல்லி)	Phyllanthus amarus	Phyllanthaceae	Phyllanthin	1. Cure Jaundice 2. Effective against Hepatitis B virus
2. Nilavembu (King of Bitters) (நிலவேம்பு)	Andrographis paniculata	Acanthaceae	Andrographolides	1. Used to treat liver disorders 2. Used to treat malaria and dengue fever.

31. Write the economic importance of rice.

1. Rice is the easily digestible and calorie rich food
2. Rice is a staple food in Southern and North East India.
3. Various rice products such as flaked rice (Aval), puffed rice (Pori) are used as a breakfast in India.
4. Rice bran oil is used in various industries.
5. Husks are used as a fuel and good source for making cattle feed and fertilizer.

32. Which TSM is widely practiced and culturally accepted in Tamil Nadu? - explain.

Siddha is the most popular, widely practiced and culturally accepted system in Tamil Nadu.

Siddha system of medicine:

1. It is based on the texts written by 18 Siddhars.
2. Siddha is principally based on Panchabudha (பஞ்சபூதத்தத்துவம்) philosophy.
3. This system working based on Vatham, Pittam and Kapam (வாதம், பித்தம், கபம்).
4. The drug sources of Siddha are Plants and Animal parts.
5. 800 different herbs are used as a drug for this system.

33. What are psychoactive drugs? Add a note Marijuana and Opium.

Some of the plants alter and individual's perceptions of mind by producing hallucination are known as psychoactive drugs.

Psychoactive Drugs						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Opium poppy (ஓபிம்/கசகசா)	Papaver somniferum (Morphine)	Papaveraceae	South Eastern Europe	Madhya Pradesh, Uttar Pradesh	1. Pain killer 2. Used in Surgery
2.	Cannabis or Marijuana (கஞ்சாசெடி)	Cannabis sativa (Trans-tetrahydrocannabinol – THC)	Cannabiaceae	China	Madhya Pradesh, Uttar Pradesh	1. Reduce hypertension 2. Treating in Glaucoma and Chemotherapy

34. What are the King and Queen of spices? Explain about them and their uses.

Spices						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Black Pepper (King of Spices and Black Gold of India) (கருமிளகு)	Piper nigrum	Piperaceae	Western Ghats	Kerala, Karnataka, Tamil Nadu,	1. Used in Sauces and Soup preparation 2. Pickle and Curry powder manufacturing
2.	Cardamom (Queen of Spices) (ஏலக்காய்)	Elettaria cardamomum	Zingiberaceae	Sri Lanka	Western Ghats	1. Bakery and Beverage industry 2. Mouth freshener

35. How will you prepare an organic pesticide for your home garden with the vegetables available from Your kitchen?**Preparation of organic pesticide:**

Hot chillies 120 gm and Garlic/Onion 110gm

↓
Blend the Vegetables together to form a thick paste

↓
Add vegetable paste with 500 warm water

↓
Pour the solution into a glass container

↓
Leave it undisturbed for 24 hours

↓
Pour the Pesticide into spray bottle

↓
Spray the pesticide into infected plants for every 4 to 5 days

↓
After 3 to 4 treatments pest will be eliminated.

One Mark Answers:

1. b) Both (i) and (ii) are correct
2. a) Assertion is correct, Reason is wrong
3. d) Brazil
4. a) A is correct, B is wrong
5. a) Lamiaceae
6. a) Tropical African region
7. d) G.barbadense
8. c) Both are correct
9. b) Dye - *Lawsonia inermis*
10. c) Both statements are correct
11. c) Both statements are correct
12. c) Marijuana
13. c) Stevioloside - Natural sweetener
14. d) *Zea mays*

1.Major Cereals					
S.No.	Common Name	Botanical Name	Origin	Area of Cultivation	Uses
1.	Rice or Paddy (நெல்)	Oryza sativa	South East Asia	China, India, Thailand	1.Flaked rice (Aval) 2.Puffed or Parched rice (Pori) 3.Rice bran oil 4.Husks
2.	Wheat (கோதுமை)	Triticum aestivum	Fertile Crescent Region	Punjab, Haryana, Rajasthan	1.Bakery Products 2.Parota 3.Alcoholic Beverages

2.Millets (Siru Thaniyangal)				
S.No.	Common Name	Botanical Name	Origin	Uses
1.	Finger Millet – Ragi (கேழ்வரகு)	Eleusine coracana	East Africa	1.Staple food 2.Nutrient drink 3.Fermented beverages
2.	Sorghum (சோளம்)	Sorghum vulgare	Africa	1.Birds, Pigs, Cattle Feed 2.Alcoholic Beverages

3.Minor Millets				
S.No.	Common Name	Botanical Name	Origin	Uses
1.	Foxtail Millet (தூண்டி)	Setaria italica	China	1.Strengthening of Heart 2.Improves eye sight
2.	Kodo Millet (வரகு)	Paspalum scrobiculatum	West Africa	1.Reduce obesity 2.Reduce Blood sugar and Blood Pressure.

4.Pulses					
S.No.	Common Name	Botanical Name	Origin	Area of Cultivation	Uses
1.	Black gram (உளுந்து)	Vigna mungo	India	Karnataka, Uttar Pradesh, Chattisgarh	1.Used as a Food 2.Flour used in Indian curries
2.	Red gram or Pigeon Pea (துவரை)	Cajanus cajan	South India	Andhra, Karnataka, Maharashtra	1.Used in Sambar Preparation. 2.Used as a Snacks
3.	Green Gram (பாசிப்பருப்பு)	Vigna radiata	India	Tamil Nadu, Karnataka, Madhya Pradesh	1.Used in Pongal Preparation. 2.Used as a Snacks 3.Used as a Cosmetics

5.Vegetables						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Lady's finger or Okra (வெண்டைக்காய்)	Abelmoschus esculentus	Malvaceae	Africa	Vellore, Coimbatore, Dharmapuri	Used as a Vegetable

6.Fruits						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Mango (மாங்காய்) (National fruit of India)	Mangifera indica	Anacardiaceae	Southern Asia	Salem, Krishnagiri, Dharmapuri	1.Edible Fruit 2.Soft drink 3.Pickle

7.Nuts						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Cashew nut (முந்திரி)	Anacardium occidentale	Anacardiaceae	Brazil	Kerala, Karnataka, Tamil Nadu	1.Sweet and Currie Preparation 2.Snacks

8.Sugars						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Sugarcane (கரும்பு)	Saccharum officinarum (S.spontaneum – India)	Poaceae	New Guinea, India	All the districts except Kanyakumari and Nilgiris	1.White sugar 2.Ethanol Preparation
2.	Palmyra (பனை) (state tree of Tamil Nadu)	Borassus flabellifer	Arecaceae	Asia, Africa	Tamil Nadu	1.Palm sugar 2.Health drink 3.Toddy

9.Oil Seeds						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Groundnut or Peanut (வேர்க்கடலை)	Arachis hypogaea	Fabaceae	Brazil	Andhara, Gujarat, Rajasthan	1.Snacks 2.Cooking oil 3.Soap and Lubricant manufacturing
2.	Sesame or Gingelly (நல்லெண்ணெய்)	Sesamum indicum	Pedaliaceae	Africa	West Bengal, Madhya Pradesh	1.Snacks 2.Cooking oil 3.Soap and Lubricant manufacturing
10.Beverages						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Coffee (கா.பி)	Coffea arabica	Rubiaceae	Ethiopia	Karnataka, Tamil Nadu, Kerala	1.Cure liver diseases 2.Reduce the risk of type 2 diabetes
11.Spices						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Cardamom (Queen of Spices) (ஏலக்காய்)	Elettaria cardamomum	Zingiberaceae	Sri Lanka	Western Ghats	1.Bakery and Beverage industry 2.Mouth freshener
2.	Black Pepper (King of Spices and Black Gold of India) (கருமிளகு)	Piper nigrum	Piperaceae	Western Ghats	Kerala, Karnataka, Tamil Nadu,	1. Used in Sauces and Soup preparation 2.Pickle and Curry powder manufacturing
3.	Turmeric (மஞ்சள்)	Curcuma longa	Zingiberaceae	Southern Asia	Tamil Nadu (Erode)	1.Cosmetics, Curry powder manufacturing 2.Anti-fungal, Bacterial, Viral activities
4.	Chillies (Red Pepper or Cayenne Pepper) (மிளகாய்)	1.Capsicum Annum (Cayenne Pepper) 2.Capsicum frutescens	Solanaceae	South America	India	1.Sauces, Curry powder manufacturing 2.Good source of Vitamin A,C,E.

12. Condiment						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Tamarind (புளி) (Dates of India)	Tamarindus indica	Fabaceae	Tropical Africa	India, Myanmar	1. Sauces, Curry powder manufacturing 2. Edible fruit

13. Fibres						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Cotton (பருத்தி)	Gossypium spp.	Malvaceae	Old world, New world	Tamil Nadu, Andhra, Maharashtra	1. Textile fibre 2. Used in Hospitals
2.	Jute (சணல்)	Corchorus spp	Malvaceae	Africa	India, Bangladesh	1. Textile fibre 2. Used in sacks and bag manufacturing

14. Timber						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Teak (தேக்கு)	Tectona grandis	Lamiaceae	South East Asia	Kerala, Assam, Tamil Nadu	1. Timber 2. Used in Door, Ship, Boat, Toy's manufacturing

15. Latex						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Rubber (இரப்பர்)	Hevea brasiliensis	Euphorbiaceae	Brazil	Kerala, Tamil Nadu	1. Eraser, Belt, Rubber-band manufacturing 2. Tyre and Footwear Production.

16. Pulp Wood						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Pulp (மரக்கூழ்) (Melia azadirachta, Neolamarkia chinensis, Casuarina spp, Eucalyptus spp)	Cyperus papyrus	Cyperaceae	Egypt	China (Discovered the Paper)	Paper and Cardboard manufacturing

17.Dyes						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Henna (மருதாணி)	Lawsonia inermis	Lythraceae	North Africa, South West Asia	Gujarat, Rajasthan, Madhya Pradesh	1.Colouring material 2.Dye used for skin, hair, nail colouring.

18.Cosmetics						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Aloe (சோற்றுக்கற்றாழை)	Aloe vera	Asphodelaceae	Sudan	Tamil Nadu, Andhra, Gujarat, Rajasthan	1.Skin tonic 2.Cream, lotion, shampoo preparation

19.Perfumes						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Jasmine (மல்லிகை)	Jasminum grandiflorum	Oleaceae	North-Western Himalayas	Madurai, Thovalai (Kanyakumari district)	1.Fumigant 2.Hair oil, cosmetics, and soap manufacturing

20.Medicinal Plants						
S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Keezhanelli (கீழாநெல்லி)	Phyllanthus amarus (Phyllanthin)	Phyllanthaceae	Tropical America	India	1.Cure Jaundice 2.Effective against Hepatitis B virus
2.	Nilavembu (King of Bitters) (நிலவேம்பு)	Andrographis paniculata (Andrographolides)	Acanthaceae	India, Sri Lanka	India	1.Used to treat liver disorders 2.Used to treat malaria and dengue fever.

21.Psychoactive Drugs

S.No.	Common Name	Botanical Name	Family	Origin	Area of Cultivation	Uses
1.	Opium poppy (அபின்/கசகசா)	Papaver somniferum (Morphine)	Papaveraceae	South Eastern Europe	Madhya Pradesh, Uttar Pradesh	1.Pain killer 2.Used in Surgery
2.	Cannabis or Marijuana (கஞ்சாசெடி)	Cannabis sativa (Trans-tetrahydrocannabinol –THC)	Cannabiaceae	China	Madhya Pradesh, Uttar Pradesh	1.Reduce hypertension 2.Treating in Glaucoma and Chemotherapy

22. Other Common Medicinal Plants

S.No.	Common Name	Botanical Name	Family	Plant part used	Uses
1.	Holy basil (துளசி)	Ocimum sanctum	Lamiaceae	Leaves, Root	1.Antiseptic 2.Used in bronchitis 3.Used in Malarial fever
2.	Indian gooseberry (நெல்லி)	Phyllanthus emblica	Phyllanthaceae	Fruit	1.Reduce fever and cough 2.Anti-aging properties 3.Rejuvenator
3.	Indian Acalypha (குப்பைமேனி)	Acalypha indica	Euphorbiaceae	Leaves	1.Cure skin diseases 2.Cure infected wounds and bedsores
4.	Vilvam (வில்வம்)	Aegle marmelos	Rutaceae	Fruit	1.Kill intestinal Parasites 2.unripe fruit used to treat stomach indigestion
5.	Veldt grape (பிரண்டை)	Cissus quadrangularis	Vitaceae	Stem, Root	1.Used to treat Bone fracture 2.Cure asthma and stomach trouble

Additional questions:**1.Ayurveda system of medicine:**

- 1.Ayurveda supposed to have originated from Brahma (பிரம்மா).
- 2.It is documented by Charaka, Sushruta, Vagbhata.
- 3.This system also working based on Vata, Pitta and Kapha (வாதம்,பித்தம்,கபம்).
- 4.This system uses more herbs and few animal parts as a drug.
- 5.Himalayan plants are used as a plant source and 500 different herbs are used as a drug for this system.

2.Folk system of medicine:

- 1.It is a oral traditional system of Medicine.
- 2.It is practiced by Rural and Tribal people of India.
- 3.This system is used by ethnic communities. 8000 Plant species have been documented.
- 4.The drug plants are documented by Research project on Ethnobiology.
- 5.Irulas, Malayalis, Kurumbas, Paliyans and Kanis these tribal communities of Tamil Nadu practiced folk system of medicine.

3.Entrepreneurial Botany:

- 1.Entrepreneurial Botany is a study of how new businesses are created using plant resources.
- 2.Entrepreneurship is now a popular topic for higher secondary students.
- 3.Vast opportunities are there for the Botany students.
- 4.Converting Botanical knowledge into a business idea.
- 5.Mushroom cultivation, Single cell protein (SCP), Organic farming, Medicinal and aromatic plant cultivation are the few examples of entrepreneurship.

4. Organic farming:

- 1.The main concept of the organic farming is Back to the Nature.
- 2.It is an alternative agricultural system in which plants and crops are cultivated in natural ways by using biological inputs to maintain the soil fertility.
- 3.Before green revolution Indian farmers are practiced organic farming.
- 4.orgainc farming is the good source for the sustainable agriculture.
- 5.Biofertilizers and micro-organisms are used for organic farming.

I.Organic Pesticide:

- 1.Pest like aphids, spider and mites can cause serious damage to flowers, fruits and vegetables.
- 2.These creatures attack the garden in swarms and drain the life of the crop.
- 3.Many chemical pesticides prove unsafe for human and the environment.
- 4.It turns fruits and vegetables are unsafe for consumption.
- 5.There are many homemade, organic options to turn to war against pests.

II.Bio-pest repellent:

Pest repellent and insecticides are made form leaves of Azadirachta indica (Neem-வேம்பு)

Preparation of Bio-pest repellent:
